in mortality, equaling 32.7 per cent., and the last period, embracing the cases of twenty years and over, gave a mortality of 39.4 per cent. Flexner calls attention to the importance of early injections of the serum. Of those cases in his series injected during the first three days of the disease, the mortality was 25.3 per cent. Those injected from the fourth to the seventh day showed a mortality of 27.8 per cent., while those injected later than the seventh day gave a mortality of 42.1 per cent.

Intravenous Injections of Antidiphtheritic Serum.—SCHREIBER (*Münch. med. Woch.*, 1909, xxxi, 1597) was induced to try intravenous injections of diphtheria antitoxin in serious cases of diphtheria by the results of the experiments of Berghaus. He has thus treated 20 cases of diphtheria, with only 1 death. This fatality occurred on the thirteenth day of cardiac paralysis. The child aged ten years received a subcutaneous injection of 2000 units and on the following day was much worse. Schreiber then injected intravenously 4000 units of antitoxin, which caused some improvement, but on the eighth day the heart became involved, and five days later the patient died. He is in favor of giving single high doses, 6000 to 10,000 units, rather than to repeat the dose in order to avoid a possible anaphylaxis. He thinks that high doses by infusion lower the temperature more rapidly than the subcutaneous injections. At the same time the general condition improves more rapidly. However, he believes that the intravenous injections do not have as good an effect on the local process. Schreiber says that if an intravenous injection is for any reason impossible, an injection deep into the gluteal muscle is more rapidly absorbed than a subcutaneous injection. He adds that high doses injected intravenously combine more surely with the toxins and are more apt to prevent paralytic complications.

Tuberculin Treatment Among Dispensary Patients.—HAMMAN and WOLMAN (*Bull. Johns Hopkins Hospital*, 1909, xxi, 225) write concerning the tuberculin treatment of dispensary patients. They believe that tuberculin may be used in the dispensary without danger and with the most satisfactory control. All dispensary patients are not suitable for the tuberculin treatment. A degree of intelligence is essential, the patient must be willing to undergo a long and often tedious cure, and must be faithful in carrying out instructions. A certain amount of home comfort and enough leisure to allow regular attendance at the dispensary are required. The early cases are much more favorable for the treatment, but in their series Hamman and Wolman took all stages. Most of the women did some work at home, and some of the men worked more or less constantly throughout the whole period of the treatment. They furnished the patients with note books in order to be more sure of their coöperation. A visiting nurse to instruct and supervise the patients is essential. The patients were kept in bed whenever they had fever either occurring spontaneously or as a result of the tuberculin injections. Fever of a mild grade when other symptoms are favorable they do not consider a contra-indication to the treatment. In addition to the tuberculin the usual hygienic and dietetic measures were ordered. Some of the patients were given olive oil, tonics, and a few had heroin and codeine for their cough, when severe. Hamman and Wolman believe that the potency of all the tuberculins depends upon the same substances and that all act in the same way. They used old tuberculin, new tuberculin, T. R., and the bouillon filtrate of Denys. Fresh dilutions were made every two weeks, and apparently the strength remained uniform during this time. They emphasize that the injection must be subcutaneous in order to determine any subsequent local reaction. They give the tuberculin in gradually increasing doses, as advocated by Trudeau, Denys, and Sahli. The initial dose is from 0.00000001 to 0.000001 gram. In the smaller doses they give injections twice a week; after 0.01 gram is reached only once a week. The essential feature of this method is to avoid the occurrence of any reaction and to carry the individual patient only as high as his tolerance will permit. The signs of developing intolerance may be expressed by a rise of temperature, constitutional symptoms, a local reaction at the site of injection, or a focal reaction, that is, an increase in the tuberculous process as measured by an increase in the physical signs or symptoms. After a moderately severe or severe reaction ten to fourteen days should elapse after all symptoms of the reaction has subsided, and then much smaller doses should be used. If a local reaction occurs the same dose is repeated until no local reaction occurs. If, on the other hand, the local reaction becomes more severe, the dose is decreased and then cautiously raised. The average maximum dose of tuberculin was 0.005 gram. The largest dose administered to an individual case was 1 gram. The early cases and those that do well take the largest dose. The far-advanced and progressive cases reach the limit of tolerance early. The duration of the treatment is based rather on the progress of the case than on the condition at the beginning of the treatment. The total number of patients who received the tuberculin treatment was 112. Hamman and Wolman report only those who were under treatment at least ninety days, a group of 71 cases; 14 of these 71 cases were not positively pulmonary tuberculosis, although probably so. They all improved as regards their tuberculous symptoms and the suggestive physical signs disappeared. The 57 remaining cases were divided into 13 incipient, 16 moderately advanced, 28 far advanced. Of the 57 patients, 10 were apparently cured, in 16 the disease was arrested, 12 were improved, 18 were progressive, and 1 far advanced case died. Of the 18 progressive cases, 4 improved as regards symptoms, 10 were unchanged as regards symptoms, and 4 far advanced cases were worse as regards symptoms. Of the 13 incipients, only 1 was progressive; of the 16 moderately advanced, 2 were progressive; of the 28 far advanced, 16 were progressive. The average gain in weight for the entire group was six and one-half pounds. The maximum gain in weight was forty-one pounds, and occurred in a far-advanced case.

The Lowering of Blood Pressure by the Nitrite Group.—WALLACE and RINGER (*Jour. Amer. Med. Assoc.*, 1909, xx, 1629) have made some observations in order to determine the comparative effect of the most common drugs of the nitrite group upon the blood pressure of normal individuals and of patients with arteriosclerosis. In order to obtain uniformity of results they gave amyl nitrite in dosage of 3 minims by inhalation; nitroglycerin, 1.5 minims of a 1 per cent. solution; sodium nitrite, 1 grain in solution; and erythrol tetranitrate, 1.5 grains in chocolate tablets. The latter three were given by the stomach. All of these drugs, in the doses above given, seemed to cause the same fall of blood pressure in normal individuals. The chief difference in their action lay in the rapidity and the duration of the fall of blood pressure. They found that the action of amyl nitrite began within one minute and was over within seven minutes; that of nitroglycerin began within two minutes, and was over within thirty minutes; that of sodium nitrite began within ten minutes, and was over within one hour; that of erythrol tetranitrate began within fifteen minutes, and was over within two to four hours. In general they found that the higher the initial pressure, the greater was the actual fall. Increase in dosage produced an increase in degree and duration of the action which is, as a rule, fairly proportional to the dose. In studying the effects on abnormally high blood pressures they took patients suffering from arteriosclerosis with pressures varying from 172 to 256 mm. Hg. They gave the following doses, $\frac{1}{30}$ grain of nitroglycerin, 2 grains of sodium nitrite, and 2 grains of erythrol tetranitrate. On comparing the results obtained in normal individuals with the results in arteriosclerotic patients, they found them very similar. Nitroglycerin had the same effect upon arteriosclerotic patients as upon normal individuals. Sodium nitrite and erythrol tetranitrate acted a little less quickly, the maximum effect came a little later, and the duration of action was slightly longer than was the case with normal individuals. Wallace and Ringer obtained a fall of blood pressure in every case. They believe that the fall of pressure is due to a dilatation of the splanchnic vessels, and that a failure is due to the fact that the splanchnic vessels are no longer capable of dilatation. They also discuss the question of the best form in which nitrites should be given, and whether they deteriorate in activity by keeping. Amyl nitrite, as usually supplied in glass pearls, keeps well if not exposed to the light. Nitroglycerin tablets may retain their activity for a year or more. However, the content of nitroglycerin in fresh tablets may vary considerably, and it is best to make use of a solution of nitroglycerin. A 1 per cent. solution keeps fairly well, and is the most reliable as regards uniformity of strength. Solutions of sodium nitrite deteriorate rapidly. A solution should not be used which is over a week old. Matthew states that ordinary tablets of erythrol tetranitrate are usually inert, but that the full activity is retained by coating the tablets with chocolate. Wallace and Ringer have found that even after keeping for one year these tablets retain their full activity.

The Treatment of Pertussis with Eucalyptus.—SOLDIN (*Klin.-Therap. Woch.*, 1909, xxix, 722) says that eucalyptus leaves have been advocated for a long time in the treatment of various respiratory diseases, especially asthma and chronic catarrh. A disinfectant and a sedative action have been ascribed to the ethereal oil contained in the leaves. Danielus and Sommerfeld advocated the vaporization of the leaves in the treatment of tuberculosis. Other authors doubt its efficacy, but it does seem to diminish both the cough and expectoration. Soldin made use of two commercial preparations of eucalyptus leaves, sanosin and sydrosin, in the treatment of pertussis. He treated 26 cases in all, and found it lessened the number and severity of the paroxysms in most of the cases. Three of the patients failed to receive any benefit from the treatment. Soldin found that this treatment was of especial value when there was a marked bronchitis or when there were indications of a complicating bronchopneumonia. He does not believe that this method is specific, but thinks it does diminish the severity and length of the disease. He advocated its use because it may be given with perfect safety.

PEDIATRICS.

UNDER THE CHARGE OF

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The Treatment with Lactic Acid Bacilli of Infantile Diarrhœas Due to Intestinal Fermentation.—C. H. Dunn (*Jour. Amer. Med. Assoc.*, 1909; liii, 5599) believes in an etiological classification of infantile diarrhœas. There are four fundamental etiological factors: (1) Nervous influences; (2) indigestion; (3) bacterial fermentation; and (4) bacterial infection. He states that true bacterial infection is caused by parasites, which live in and on the tissues of the body, whereas bacterial fermentation is caused by saprophytes living in and on the intestinal contents. The treatment of the two conditions is absolutely different, the former cases yielding to serotherapy and vaccine therapy, the latter to other methods. Dunn quotes Tissier, who found that Bacillus perfringens is the cause of fermental diarrhœa, and that the lactic acid bacillus stopped its development. He, therefore, gave such patients pure cultures of this bacillus, noting rapid transformation of their stools, subsidence of their symptoms, and gain in weight. For this same purpose Dunn employed unpasteurized buttermilk, believing that it would contain large numbers of these bacilli. The buttermilk selected was first pasteurized to kill all other organisms, then inoculated with a pure culture of lactic acid bacilli, and ripened until the development of the organism had brought about the proper acidity and precipitation of the casein. Of 28 cases of fermental diarrhœa thus treated, 23 recovered completely, in 3 the treatment was partly successful, while in only 2 did it fail. The cured cases lost their diarrhœa, and gained weight rapidly. All these babies had failed to improve on routine treatment, and also when fed on pasteurized buttermilk; the recovery, therefore, cannot be due to the chemical peculiarities of the food, but to the only new element added, the lactic acid bacilli. In a number of the children, to assure a steady gain in weight, the patient had to be given alternate feedings of modified milk, thus suggesting that while buttermilk can check the fermentation, it is not suited to the caloric needs of the child. In all the cases the buttermilk was stopped as soon as the diarrhœa was checked, and the food employed previously was resumed. In four cases ripened milk could not be digested; they